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PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional) TIMI 3.0-003	
	Application Number 10/812,349	Filed March 30, 2004	
	First Named Inventor Tomoo Iijima		
	Art Unit 2814	Examiner A. Kalam	
<p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a notice of appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.</p> <p>I am the</p> <p><input type="checkbox"/> applicant /inventor.</p> <p><input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)</p> <p><input checked="" type="checkbox"/> attorney or agent of record. Registration number 43,519</p> <p><input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34. _____</p> <p>Signature:  Signature Stephen J. Brown Typed or printed name (908) 518-6377 Telephone number August 10, 2009 Date</p> <p>NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.</p>			

☒ *Total of 1 forms are submitted.

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the U.S. Postal Service on the date shown below with sufficient postage as First Class Mail, in an envelope addressed to: MS AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Dated: August 10, 2009

Signature: 

(Stephen J. Brown)

ARGUMENTSI. 35 U.S.C. § 102 Rejection

The Examiner has finally rejected claims 52-54 and 56 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,376,769 to Chung (hereinafter "*Chung*"). In light of the fact that the presently claimed invention recites "a plurality of discrete *etched* solid metal bumps," Applicants respectfully submit that the Examiner's rejection fails to present a *prima facie* case for anticipation of the claims. (Claims 52 and 56 (emphasis added).)

However, *Chung* fails to teach the limitation of "etched solid metal bumps". *Chung* discloses an electronic package which utilizes contacts/vias 335. *Chung* teaches that "[t]he via holes are filled with conductive material by a building-up process by plating metal into the via holes to form conductive vias 112 that substantially fill the via holes, preferably by plating the same metal as the metal foil . . . or alternatively by depositing an electrically-conductive composition such as a conductive adhesive. . . ." (Col.14 ll.46-64.) *Chung* further explains that the "conductive vias 212 may be plated-up metal or electrically-conductive adhesive. . . ." (Col.17 ll.45-55.) In sum, *Chung* teaches only the use of conductive paste or plating. Use of conductive paste does not result in "etched solid metal bumps," as recited in claims 52 and 56. Accordingly, *Chung* is completely silent as to any "etched solid metal bumps."

In addition, the Examiner has acknowledged that "*Chung* does not disclose the wiring circuit panel further including a second metal wherein said metal layer is an etch stop layer" (Office Action 4.) Accordingly, *Chung* does not disclose or suggest the use of an etch stop layer, which is required for etching a solid metal bump from a tri-metal. While an etching

metal layer is not required to create the claimed solid metal bump (see, e.g., ¶ [0023]), such factors clearly demonstrate that *Chung* does not disclose any etched solid metal bump.

For at least the foregoing reasons, Applicants respectfully submit that the Examiner's 35 U.S.C. § 102 rejection fails to present a *prima facie* case for the anticipation of the claimed invention.

II. 35 U.S.C. § 103 Rejections

The Examiner has finally rejected claims 52-54 and 56 under 35 U.S.C. § 103(a) as being obvious over *Chung*. In making the rejection, the Examiner has alleged that "the limitation 'etched' which describes a method of forming the solid metal bumps, is drawn to an intermediate process step that does not affect the structure of the final device." (Office Action 4.) The Examiner has determined that "the process limitations . . . does not carry patentable weight in a claim drawn to a structure because a distinct structure is not necessarily produced." (*Id.*) Applicants respectfully submit that the Examiner's rejection is misplaced.

Initially, Applicants wish to draw the Examiner's attention to recent precedent handed down from the U.S. Court of Appeals for the Federal Circuit, which states that when analyzing a "product-by-process" limitation, the process limitations must be considered in determining the scope of the claimed invention. *Abbott Labs. v. Sandoz, Inc.*, Nos. 2007-1400, 2007-1446, 2009 WL 1371410, at *9 (Fed. Cir. May 18, 2009). Accordingly, Applicant respectfully submits that the "etched solid metal bumps" as recited in claims 52 and 56 (and the claims that depend there from) should be considered in the Examiner's determination of the patentability of such claims.

Moreover, Applicants respectfully submit that contrary to the assertions set forth in the Office Action, the claim

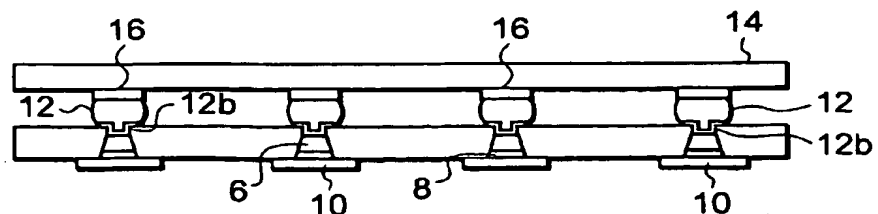
limitation "etched" structurally distinguishes the etched solid metal bumps from the metal bumps disclosed in *Chung*. Etched metal posts have inherent structural limitations that are simply not disclosed in *Chung*. For example, etched metal posts are necessarily solid metal posts, as opposed to conductive paste or plating. This is due to the fact that the solid metal posts are etched from a solid metal layer. Additionally, etched metal posts typically have an underlying layer or etching layer below the base of the solid metal post.

Chung neither discloses such a solid metal post or the presence of an etching layer. Rather, *Chung* discloses the use of conductive paste or plating. Accordingly, such inherent structural differences between the claimed "etched" solid metal bumps and the vias of *Chung* are clearly distinguishable.

The Examiner has finally rejected claims 57-59 and 67-69 as being unpatentable over *Chung*, in view of Applicants' Admitted Prior Art FIGS. 13A to 13I ("APA").

As shown below from FIG. 13I reproduced from APA below, the only way to connect the metal post to the solder ball 12 is by use of a base film 12b interposed between the solder ball 12 and metal post. However, as explained in Applicants' specification, the multilayer solder ball base film 12b is formed by plating, followed by selective etching for patterning in such a way as to separately define the solder ball base film 12b connected to each bump 6. (See, e.g., ¶ [0016].) The step of incorporating a base film 12b is an additional step that adds to the overall cost of the package.

FIG. 13I



Assuming that *Chung* and APA could be properly combined, the resulting structure would not be an obvious variant of Applicants' claimed invention. Indeed, the combination of these references would result in a structure including the base film 12b, and therefore also requiring the additional manufacturing step of plating the base film 12b over the solid metal bump 6, prior to deposition of the solder bump 12. Indeed, nothing in *Chung* or the APA suggests an alternative structure.

In contrast, Applicants' claimed invention eliminates this additional step by directly forming the solder ball 12 on the top face of each bump 6 exposed at the surface of the insulating film 4. (See p.33.) This saves the trouble of forming a solder ball base film 12b as a base for the solder ball. (*Id.*) As a result, as compared with the APA, the number of steps necessary for manufacturing the wiring circuit board can be reduced. (*Id.*)

Moreover, as discussed above, Applicants respectfully submit that there are inherent structural differences associated with etched metal bumps that distinguish them from conductive vias, such as disclosed by *Chung*. For example, by virtue of the etching process, metal bumps are necessarily formed from at least one layer of a multi-metal layer.

Further, as set forth in dependent claims 68-69, the etching process also necessarily results in a metal bump with a base that is wider than the top portion. For example, the bump is typically conical and may be substantially trapezoidal in cross section. (See, e.g., ¶ [0134].) In contrast, *Chung* only discloses that the conductive vias 112 may be about 75 micrometers in diameter. (See col.12 ll.30-32.) There is no discussion regarding vias having differing diameters.

For at least these foregoing reasons, Applicants respectfully submit that *Chung*, either alone or in combination with APA, would not render claims 57-59 and 67-69 as obvious.

Accordingly, Applicants respectfully submit that the Examiner's rejection is overcome.

III. CONCLUSION

As it is believed that all of the rejections set forth in the Official Action have been fully met, favorable reconsideration and allowance are earnestly solicited.